इंटरनेट मानक

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“Knowledge is such a treasure which cannot be stolen”

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IS 12032 (Part 5) : 1993
IEC Pub 617 - 5 (1983)
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भारतीय मानक

विद्युत तकनीकी क्षेत्र से सम्बन्धित आरेखों के लिए ग्राफीय संकेत

भाग 5 अर्धचालक तथा इलैक्ट्रान ट्यूब

Indian Standard

GRAPHICAL SYMBOLS FOR DIAGRAMS IN THE FIELD OF ELECTROTECHNOLOGY

PART 5 SEMICONDUCTORS AND ELECTRON TUBES

UDC 621·382·621·385 : 003·62

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1993 Price Group 9

Basic Standards on Electronics and Telecommunication Sectional Committee, LTD 1

NATIONAL FOREWORD

This Indian Standard (Part 5) which is identical with IEC Pub 617-5 (1983) 'Graphical symbols for diagrams — Part 5 : Semiconductors and electron tubes', issued by the International Electrotechnical Commission (IEC), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Standards on Electronics and Telecommunication Sectional Committee (LTD 1) and approval of the Electronics and Telecommunication Division Council.

The text of IEC Standard has been approved as suitable for publication as Indian Standard without deviations. Certain terminology and conventions are however not identical with those used in Indian Standards. Attention is especially drawn to the following:

> Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

This standard is the fifth part of the series on Indian Standards on graphical symbols for diagrams. Other parts are as follows:

Part 1	General information
Part 2	Symbol elements, qualifying symbols and other symbols having general application
Part 3	Conductors and connecting devices
Part 4	Passive components
Part 6	Production and conversion of electrical energy
Part 7	Switch gear, control gear and productive devices
Part 8	Measuring instruments, lamps and signalling devices
Part 9	Telecommunications : switching and peripheral equipment
Part 10	Telecommunications : transmission
Part 11	Architectural and topographical installation and diagrams
Part 12	Binary logic elements
Part 13	Analogue elements

Only the English language text in the International Standard has been retained while adopting it in this Indian Standard.

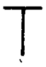
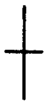
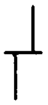
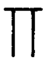
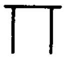
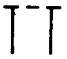
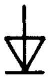
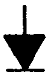
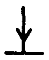
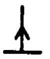
Indian Standard

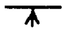
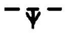
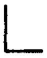
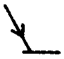
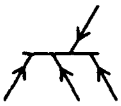
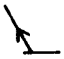
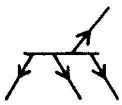
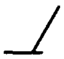
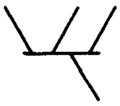
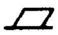
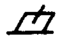
GRAPHICAL SYMBOLS FOR DIAGRAMS IN THE FIELD OF ELECTROTECHNOLOGY

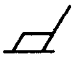
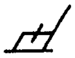
PART 5 SEMICONDUCTORS AND ELECTRON TUBES

CHAPTER I: SEMICONDUCTOR DEVICES

SECTION 1 – SYMBOL ELEMENTS

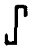
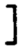
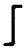
No.	Symbol	Description
05-01-01		Semiconductor region with one ohmic connection The horizontal line is the semiconductor region and the vertical line is the ohmic connection
05-01-02	Form 1 	Semiconductor region with several ohmic connections, shown with examples with two ohmic connections
05-01-03	Form 2 	
05-01-04	Form 3 	
05-01-05		Conduction channel for depletion type devices
05-01-06		Conduction channel for enhancement devices
05-01-07	Preferred form 	Rectifying junction
05-01-08	Other form 	
		Junction which influences a semiconductor layer by means of an electric field, for example in a junction field effect transistor
05-01-09		P-region which influences an N-layer
05-01-10		N-region which influences a P-layer

No.	Symbol	Description
		Indication of the conductivity type of the channel for insulated gate field effect transistors (IGFET)
05-01-11		N-type channel on P-type substrate, shown for a depletion type IGFET
05-01-12		P-type channel on an N-type substrate, shown for an enhancement type IGFET
05-01-13		Insulated gate *Note.* – For an example with multiple gates, see symbol 05-05-17.
		Emitter on a region of dissimilar conductivity type The slanting line with arrow represents the emitter
05-01-14		P emitter on N region
05-01-15		Several P emitters on N region
05-01-16		N emitter on P region
05-01-17		Several N emitters on P region
05-01-18		Collector on a region of dissimilar conductivity type The slanting line represents the collector
05-01-19		Several collectors on a region of dissimilar conductivity type
05-01-20		Transition between regions of dissimilar conductivity types, either P to N, or N to P The short slanting line indicates the point of change along the horizontal line from P to N, or from N to P. No ohmic connection shall be made to the short slanting line
05-01-21		Intrinsic region separating regions of dissimilar conductivity type thus giving either a PIN or NIP structure The intrinsic region lies between the linked slanting lines. Any ohmic connection to the region I shall be made between the short slanting lines and not to them
05-01-22		Intrinsic region between regions of similar conductivity type giving either a PIP or NIN structure

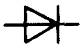
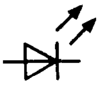
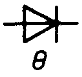
No.	Symbol	Description
05-01-23		Intrinsic region between a collector and a region of dissimilar conductivity type giving either a PIN or NIP structure The connection to the collector is made to the long slanting line
05-01-24		Intrinsic region between a collector and a region of similar conductivity type giving either a PIP or NIN structure The connection to the collector is made to the long slanting line

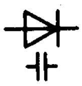
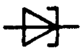
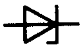
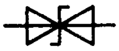
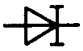
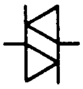
SECTION 2 – QUALIFYING SYMBOLS PARTICULAR TO SEMICONDUCTOR DEVICES

2.1 If necessary, a special function or property essential for circuit operation may be indicated by a qualifying symbol placed adjacent to, or forming part of the symbol of the device.

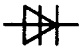
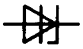
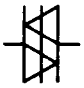
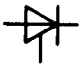
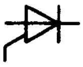
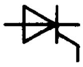
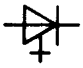
No.	Symbol	Description
05-02-01		Schottky effect
05-02-02		Tunnel effect
05-02-03		Unidirectional breakdown effect
05-02-04		Bidirectional breakdown effect
05-02-05		Backward effect (unitunnel effect)

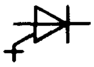
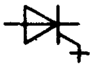
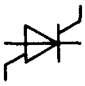
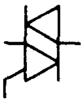
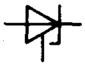
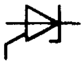
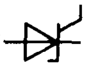
SECTION 3 – EXAMPLES OF SEMICONDUCTOR DIODES

No.	Symbol	Description
05-03-01		Semiconductor diode, general symbol
05-03-02		Light emitting diode, general symbol
05-03-03		Diode where use is made of its temperature dependence *Note.* – θ may be replaced by $t°$.

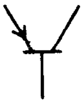
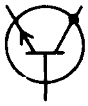
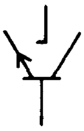
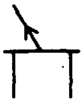
No.	Symbol	Description
05-03-04		Variable capacitance diode (varactor)
05-03-05		Tunnel diode
05-03-06		Breakdown diode, unidirectional Voltage regulator diode Esaki-diode
05-03-07		Breakdown diode, bidirectional
05-03-08		Backward diode (unitunnel diode)
05-03-09		Bidirectional diode Diac

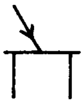
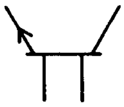
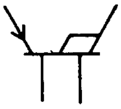
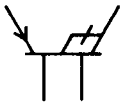
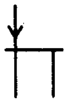
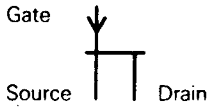
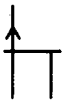
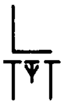
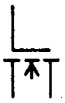
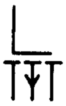
SECTION 4 – EXAMPLES OF THYRISTORS

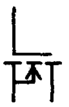
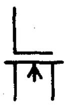
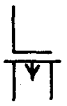
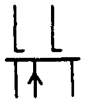
No.	Symbol	Description
05-04-01		Reverse blocking diode thyristor
05-04-02		Reverse conducting diode thyristor
05-04-03		Bidirectional diode thyristor
05-04-04		Triode thyristor, type unspecified *Note.* – This symbol is used to represent a reverse blocking triode thyristor, if it is not necessary to specify the type of gate.
05-04-05		Reverse blocking triode thyristor, N-gate (anode-side controlled)
05-04-06		Reverse blocking triode thyristor, P-gate (cathode-side controlled)
05-04-07		Turn-off triode thyristor, gate not specified

No.	Symbol	Description
05-04-08		Turn-off triode thyristor, N-gate (anode-side controlled)
05-04-09		Turn-off triode thyristor, P-gate (cathode-side controlled)
05-04-10		Reverse blocking thyristor tetrode type
05-04-11		Bidirectional triode thyristor Triac
05-04-12		Reverse conducting triode thyristor, gate not specified
05-04-13		Reverse conducting triode thyristor, N-gate (anode-side controlled)
05-04-14		Reverse conducting triode thyristor, P-gate (cathode-side controlled)

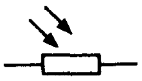
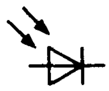
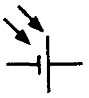
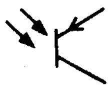
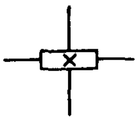
SECTION 5 - EXAMPLES OF TRANSISTORS

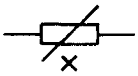
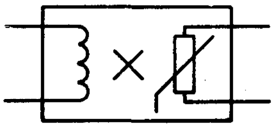
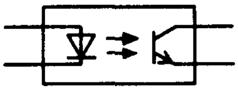
No.	Symbol	Description
05-05-01		PNP transistor
05-05-02		NPN transistor with collector connected to the envelope
05-05-03		NPN avalanche transistor
05-05-04		Unijunction transistor with P-type base

No.	Symbol	Description
05-05-05		
05-05-06		NPN transistor with transverse biased base
05-05-07		PNIP transistor with ohmic connection to the intrinsic region
05-05-08		PNIN transistor with ohmic connection to the intrinsic region
05-05-09		Junction field effect transistor with N-type channel *Note.* – The gate and source connections shall be drawn in line. 
05-05-10		Junction field effect transistor with P-type channel
05-05-11		Insulated gate field effect transistor (abridged IGFET) enhancement type, single gate, P-type channel without substrate connection *Note.* – For an example with multiple gates, see symbol 05-05-17.
05-05-12		IGFET enhancement type, single gate, N-type channel without substrate connection
05-05-13		IGFET enhancement type, single gate, P-type channel with substrate connection brought out

No.	Symbol	Description
05-05-14		IGFET enhancement type, single gate, N-type channel with substrate internally connected to source
05-05-15		IGFET, depletion type, single gate, N-type channel without substrate connection
05-05-16		IGFET, depletion type, single gate, P-type channel without substrate connection
05-05-17		IGFET, depletion type with two gates, N-type channel with substrate connection brought out *Note.* – In the case of multiple gates, the primary gate and the source connection shall be drawn in line.

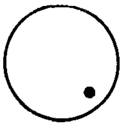
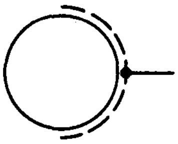
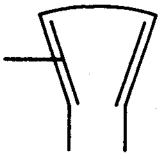
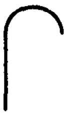
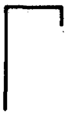
SECTION 6 – EXAMPLES OF PHOTO-SENSITIVE AND MAGNETIC FIELD SENSITIVE DEVICES

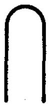
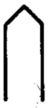
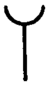
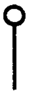
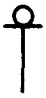
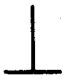
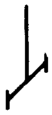
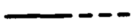
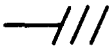
No.	Symbol	Description
05-06-01		Light dependent resistor Photo-conductive device with symmetrical conductivity
05-06-02		Photodiode Photo-conductive device with asymmetrical conductivity
05-06-03		Photovoltaic cell
05-06-04		Phototransistor, PNP type shown
05-06-05		Hall generator with four ohmic connections

No.	Symbol	Description
05-06-06		Magnetoresistor, linear type shown
05-06-07		Magnetic coupling device Magnetic isolator
05-06-08		Optical coupling device Opto isolator shown with light emitting diode and photo-transistor

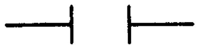
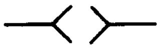
CHAPTER II: ELECTRON TUBES

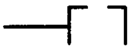
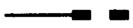
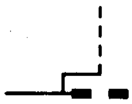
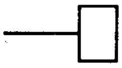
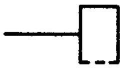
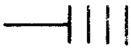
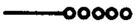
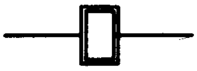
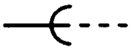
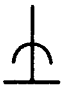
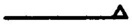
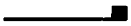
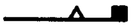
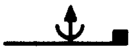
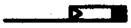
SECTION 7 – SYMBOL ELEMENTS, GENERAL

No.	Symbol	Description
05-07-01		Gas-filled envelope
05-07-02		Envelope with external screen (shield)
05-07-03		Conductive coating on internal surface of envelope
05-07-04	Forme préférée Preferred form 	Hot cathode, indirectly heated
05-07-05	Autre forme Other form 	

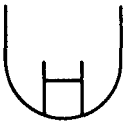
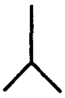
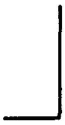
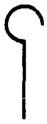
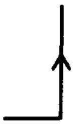
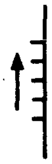
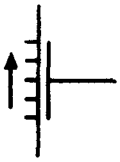
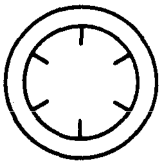
No.	Symbol	Description
05-07-06	Forme préférée Preferred form 	Hot cathode, directly heated Heater for hot cathode, indirectly heated Heater for thermocouple
05-07-07	Autre forme Other form 	
05-07-08		Photoelectric cathode
05-07-09		Cold cathode Ionically heated cathode
05-07-10		Composite electrode serving as an anode and/or as a cold cathode *Note.* – The connection line to the symbol may be shown horizontally. See symbol 05-14-02.
05-07-11		Anode Plate Collector (microwave devices)
05-07-12		Fluorescent target *Note.* – Symbol 05-07-11 may be used if there is no risk of confusion.
05-07-13		Grid
05-07-14		Ion diffusion barrier

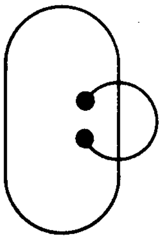
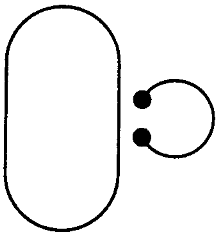
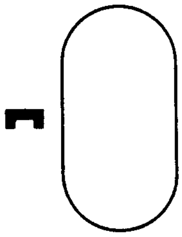
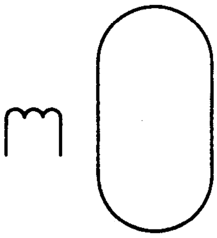
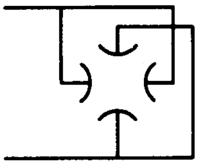
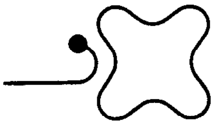
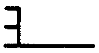
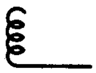
SECTION 8 – SYMBOL ELEMENTS MAINLY APPLICABLE TO CATHODE-RAY TUBES AND TELEVISION CAMERA TUBES

No.	Symbol	Description
05-08-01	Forme préférée Preferred form 	Lateral deflecting electrodes, one pair of electrodes shown
05-08-02	Autre forme Other form 	

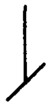
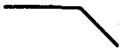
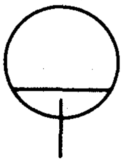
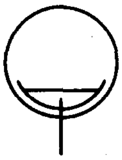
No.	Symbol	Description
05-08-03		Intensity modulating electrode *Note.* – Symbol 05-07-13 may be used if no confusion will arise.
05-08-04		Focusing electrode with aperture Beam-forming plate The note with symbol 05-08-03 applies
05-08-05		Beam-splitting electrode internally connected to the final focusing electrode of the electron gun
05-08-06		Cylindrical focusing electrode Drift space electrode Electronic lens element The note with symbol 05-08-03 applies
05-08-07		Cylindrical focusing electrode with grid
05-08-08		Multi-aperture electrode The note with symbol 05-08-03 applies
05-08-09		Quantizing electrode Sampling electrode
05-08-10		Radial deflecting electrodes, one pair of electrodes shown
05-08-11		Grid with secondary emission
05-08-12		Anode with secondary emission Dynode
05-08-13		Photo-emissive electrode
05-08-14		Storage electrode
05-08-15		Photo-emissive storage electrode
05-08-16		Storage electrode with secondary emission in the direction of the arrow
05-08-17		Photo-conductive storage electrode

SECTION 9 – SYMBOL ELEMENTS MAINLY APPLICABLE TO MICROWAVE TUBES

No.	Symbol	Description
05-09-01	Forme simplifiée Simplified form 	Electron gun assembly, shown with envelope
05-09-02		Reflector
05-09-03		Non-emitting sole for open slow-wave structure
05-09-04		Non-emitting sole for closed slow-wave structure
05-09-05		Emitting sole (arrow indicates direction of electron flow)
05-09-06		Open slow-wave structure (arrow indicates direction of energy flow)
05-09-07		Single electrode for electrostatic focusing along open slow-wave structure
05-09-08		Closed slow-wave structure, shown with envelope

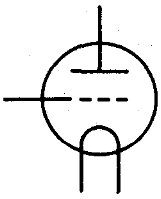
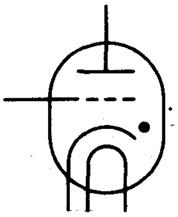
No.	Symbol	Description
05-09-09		Cavity resonator forming an integral part of tube
05-09-10		Cavity resonator, partly or wholly external to tube
05-09-11		Permanent magnet producing a transverse field (in a crossed field or magnetron type tube)
05-09-12		Electromagnet producing a transverse field (in a crossed field or magnetron type tube)
05-09-13		Tetrapole
05-09-14	Simplified form 	Tetrapole with loop coupler
05-09-15		Slow-wave coupler
05-09-16		Helical coupler

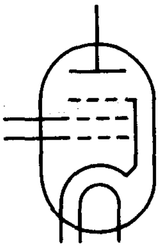
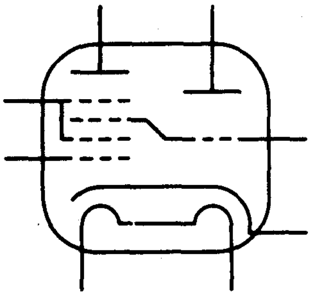
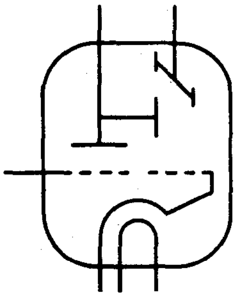
SECTION 10 - SYMBOL ELEMENTS APPLICABLE TO MISCELLANEOUS TUBES, INCLUDING MERCURY ARC RECTIFIERS

No.	Symbol	Description
05-10-01		X-ray tube anode
05-10-02		Trigger electrode Igniting electrode
05-10-03		Pool cathode, shown with envelope
05-10-04		Insulated pool cathode, shown with envelope

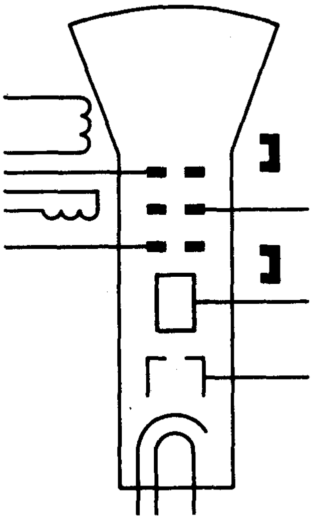
SECTION 11 - EXAMPLES OF ELECTRONIC TUBES

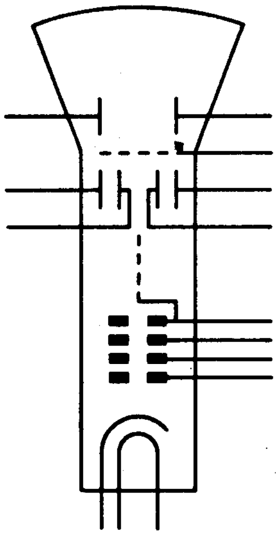
11.1 The graphical representation of any one tube need show only those elements and details which are, for the purpose of the drawing or diagram, relevant to a correct interpretation and/or necessary for showing circuit connections.

No.	Symbol	Description
05-11-01		Triode, with directly heated cathode
05-11-02		Thyratron Gas-filled triode with indirectly heated cathode

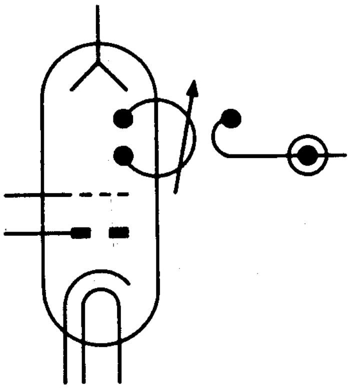
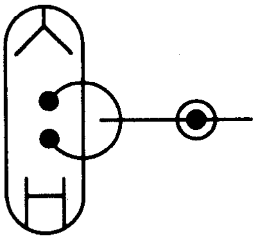
No.	Symbol	Description
05-11-03		Pentode, with indirectly heated cathode and internal strap between suppressor-grid and cathode
05-11-04		Triode hexode, indirectly heated
05-11-05		Tuning indicator (magic eye) with indirectly heated cathode

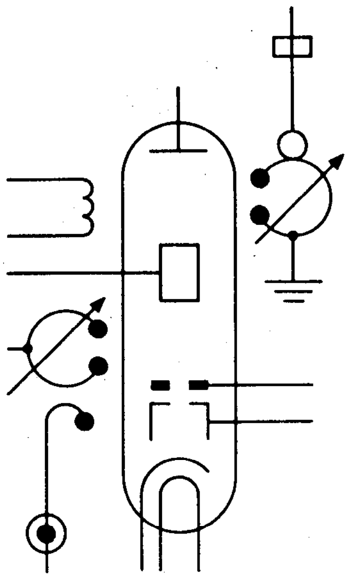
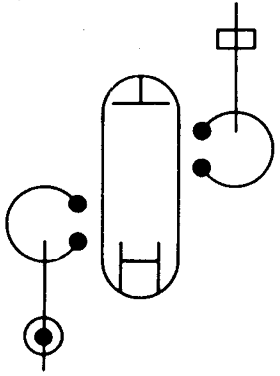
SECTION 12 – EXAMPLES OF CATHODE-RAY TUBES

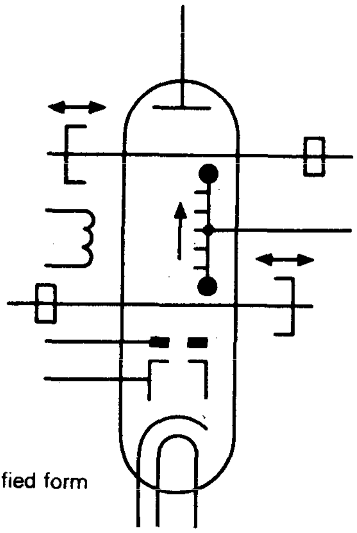
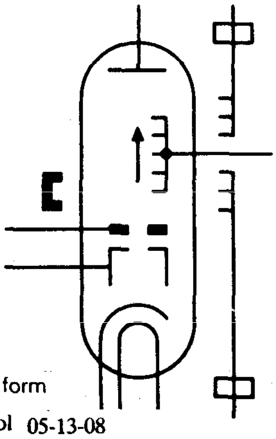
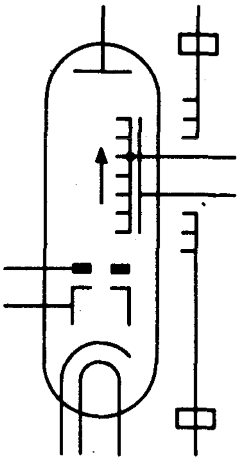
No.	Symbol	Description
05-12-01		Cathode-ray tube with electromagnetic deviation, with: – permanent magnet focusing and ion trap – intensity modulating electrode – indirectly heated cathode For example television picture tube

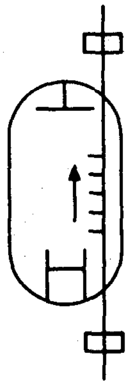
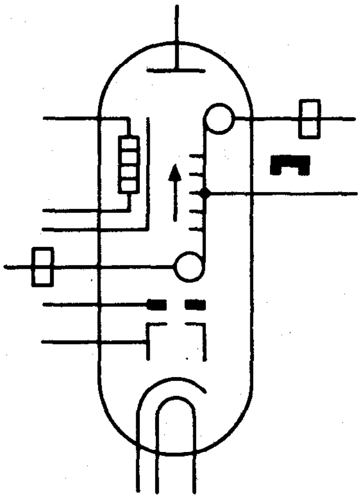
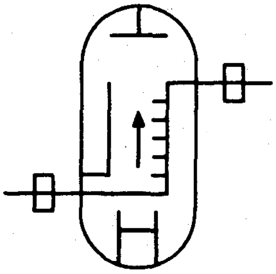
No.	Symbol	Description
05-12-02		Double-beam cathode-ray tube, split-beam type with: - electrostatic deflection - indirectly heated cathode

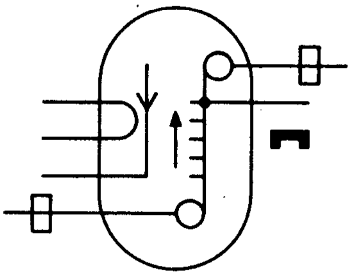
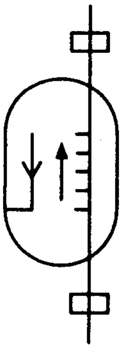
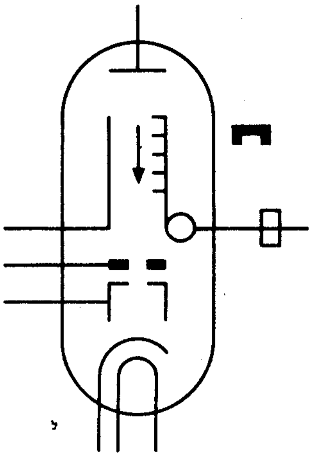
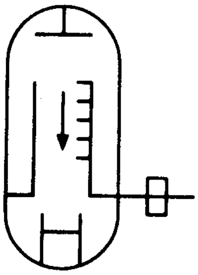
SECTION 13 – EXAMPLES OF MICROWAVE TUBES

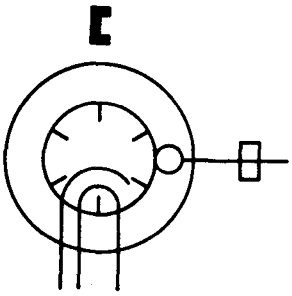
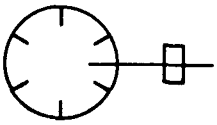
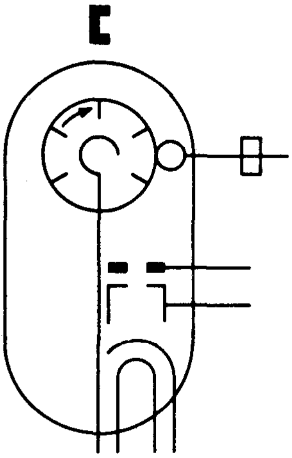
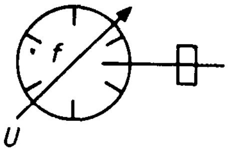
No.	Symbol	Description
05-13-01		Reflex klystron with: - indirectly heated cathode - beam-forming plate - grid - tunable integral cavity resonator - reflector - loop coupler to coaxial output
05-13-02	Simplified form 	

No.	Symbol	Description
05-13-03		Klystron with: – indirectly heated cathode – intensity modulating electrode – beam-forming plate – external tunable input cavity resonator – drift space electrode – external tunable output cavity resonator with d.c. connection – collector – focusing coil – input loop coupler to coaxial waveguide – output window coupler to rectangular waveguide
05-13-04	Simplified form 	

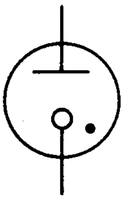
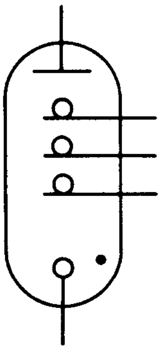
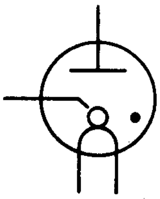
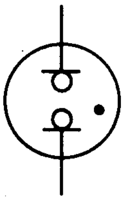
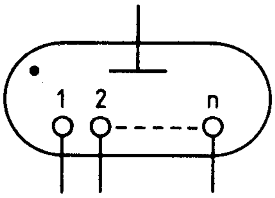
No.	Symbol	Description
05-13-05	 Simplified form Use symbol 05-13-08	O-type forward travelling wave amplifier tube with: – indirectly heated cathode – intensity modulating electrode – beam-forming plate – slow-wave structure with d.c. connection – collector – focusing coil – probe-couplers to rectangular waveguides each with sliding short
05-13-06	 Simplified form Use symbol 05-13-08	O-type forward travelling wave amplifier tube with: – indirectly heated cathode – intensity modulating electrode – beam-forming plate – slow-wave structure with d.c. connection – collector – permanent focusing-magnet – slow-wave couplers to rectangular waveguides
05-13-07	 Simplified form Use symbol 05-13-08	O-type forward travelling wave amplifier tube with: – indirectly heated cathode – intensity modulation electrode – beam-forming plate – slow-wave structure with d.c. connection – electrostatic focusing electrode – collector – slow-wave couplers to rectangular waveguides

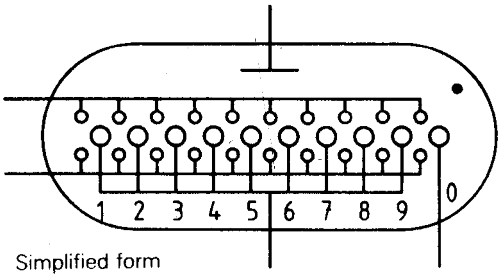
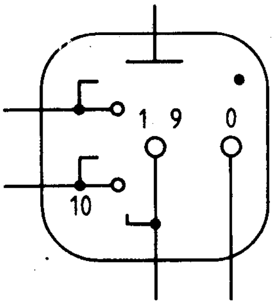
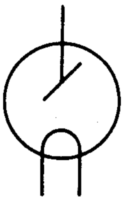
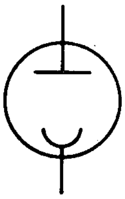
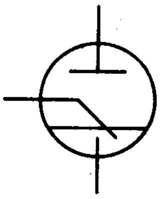
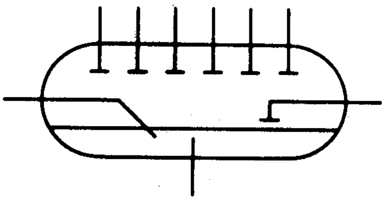
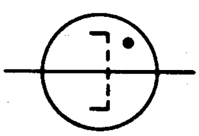
No.	Symbol	Description *(continued)*
05-13-08	Simplified form 	O-type forward travelling wave amplifier tube, simplified representation (simplified form for symbols 05-13-05, 05-13-06 or 05-13-07)
05-13-09		M-type forward travelling wave amplifier tube with: - indirectly heated cathode - intensity modulating electrode - beam-forming plate - preheated non-emitting sole - slow-wave structure with d.c. connection - collector - permanent transverse field magnet - window couplers to rectangular waveguides
05-13-10	Simplified form 	

No.	Symbol	Description
05-13-11		M-type backward (travelling) wave amplifier tube with: – filament-heated emitting sole – slow-wave structure with d.c. connection – permanent transverse field magnet – window-couplers to rectangular waveguides
05-13-12	Simplified form 	
05-13-13		M-type backward (travelling) wave oscillator tube with: – indirectly heated cathode – intensity modulating electrode – beam-forming plate – non-emitting sole – slow-wave structure with d.c. connection via waveguide – collector – permanent transverse field magnet – window-coupler to rectangular waveguide
05-13-14	Simplified form 	

No.	Symbol	Description
05-13-15		Magnetron oscillator tube with: – indirectly heated cathode – closed slow-wave structure with d.c. connection via waveguide – permanent field magnet – window-coupler to rectangular waveguide
05-13-16	Simplified form 	
05-13-17		Backward (travelling) wave oscillator tube (voltage tunable magnetron) with: – indirectly heated cathode – intensity modulating electrode – beam-forming plate – closed slow-wave structure with d.c. connection via waveguide – non-emitting sole – permanent field magnet – window-coupler to rectangular waveguide
05-13-18	Simplified form 	

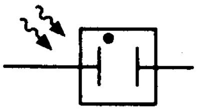
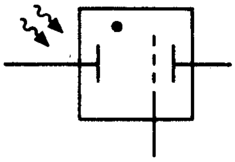
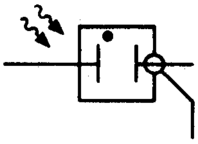
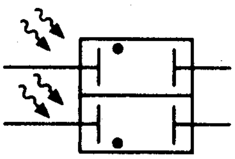
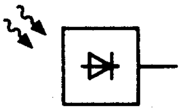
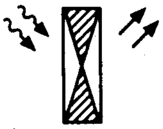
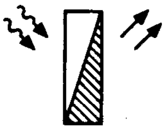
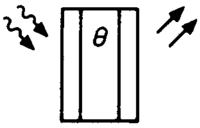
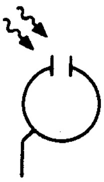
SECTION 14 – EXAMPLES OF MISCELLANEOUS TUBES INCLUDING MERCURY ARC RECTIFIERS

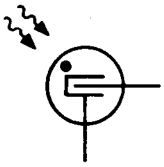
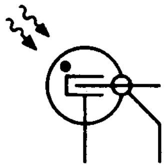
No.	Symbol	Description
05-14-01		Cold-cathode tube, gas-filled; for example voltage stabilizer
05-14-02		Voltage stabilizer, gas-filled, stabilizing several voltages
05-14-03		Trigger tube with ionically heated cathode and supplementary heating
05-14-04		Cold-cathode gas-filled tube, symmetrical; for example neon indicator
05-14-05		Character display tube (multi cold-cathode gas-filled) *Note.* – The characters displayed may be indicated above the cathodes as shown

No.	Symbol	Description
05-14-06		Counting tube with: – two sets of guide cathodes – one set of main cathodes, and – one output electrode If desired, the direction of rotation of the discharge may be shown by an arrow
05-14-07	Simplified form 	
05-14-08		X-ray tube with directly heated cathode
05-14-09		Phototube
05-14-10		Ignitron
05-14-11		Rectifier with six main anodes and with an ignitor and excitation anode
05-14-12		T-R tube

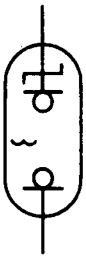
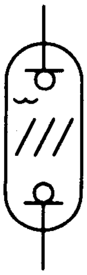
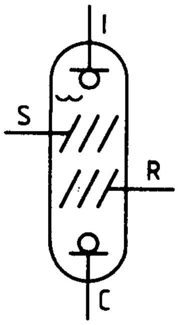
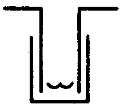
CHAPTER III: RADIATION DETECTORS AND ELECTROCHEMICAL DEVICES

SECTION 15 – EXAMPLES OF IONIZING RADIATION DETECTORS

No.	Symbol	Description
05-15-01		Ionization chamber
05-15-02		Ionization chamber with grid
05-15-03		Ionization chamber with guard ring
05-15-04		Ionization chamber, compensated type
05-15-05		Detector, semiconductor type
05-15-06		Scintillator detector
05-15-07		Čerenkov detector
05-15-08		Thermoluminescence detector
05-15-09		Faraday cup

No.	Symbol	Description
05-15-10		Counter tube
05-15-11		Counter tube with guard ring

SECTION 16 – ELECTROCHEMICAL DEVICES

No.	Symbol	Description
05-16-01		Coulomb accumulator (electrochemical step-function device) *Note.* – The step from the low-resistance to the high-resistance state is reached by making the electrode marked with the step-function symbol the anode.
05-16-02		Solion diode
05-16-03		Solion tetrode *Note.* – Letters are not part of the symbol. I ≙ input S = shield R = readout C = common
05-16-04		Conductivity cell

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